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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/818,388	03/27/2001	Frank Sauer	2001P05445US	1674

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Siemens Corporation
Intellectual Property Department
186 Wood Avenue South
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EXAMINER

GOOD JOHNSON, MOTILEWA

ART UNIT	PAPER NUMBER
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2675

DATE MAILED: 03/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/818,388

Applicant(s)

SAUER ET AL.

Examiner

Motilewa A. Good-Johnson

Art Unit

2675

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 18-25 and 28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18-25 and 28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This office action is responsive to the following communications: Application, filed 03/27/2001; Amendment A, filed 06/30/2003; Amendment B, filed 11/10/2003; Amendment C, filed 12/15/2003; Amendment D, filed 05/03/2004; Amendment, filed 12/20/2004.
2. Claims 1-16, 18-25 and 28 are pending in this application. Claims 1, 13 and 25 are independent claims. Claim 28 has been added.
3. The present title of this application is "Augmented Reality Guided Instrument Positioning with Modulated Guiding Graphics" (as originally filed).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-16, 18-25 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al., U.S. Patent Number 5,765,561, class 600/407 in view of Fukunaga, U.S. Patent Number 6,346,940 B1, "Virtualized Endoscope System", class 345/427, 02/2002, filed 02/1998.

Regarding claim 1, Chen discloses a method for augmented reality guided instrument positioning, comprising the steps of: displaying a real view of an environment

Art Unit: 2675

(col. 9, lines 5-7); marking the preferred path with a graphics guide (col. 8, lines 26-30); augmenting the real view with a rendering of the graphics guide (col. 10, lines 1-12) such that at least one portion of the graphics guide is transparent with respect to other portions of the graphics guide to provide a substantially unobstructed view through the at least one portion of the graphics guide to at least a portion of the instrument (col. 10, lines 15-29); aligning the instrument with the graphics guide so that the instrument appears in a same location as the graphics guide in the augmented view, and when properly aligned, at least a portion of the instrument is visible through the at least one transparent portion of the graphics guide (col. 10, lines 29-33); and inserting the instrument in the graphics guide.

However, it is noted that Chen fails to disclose an instrument included in the real view of the environment, determining a preferred path for positioning of said instrument, and inserting the instrument in the graphics guide.

Fukunaga discloses a real electronic endoscope system to prepare virtual images containing endoscopic guide data, col. 5, lines 30-39, which Examiner interprets as including an instrument in a real view of the environment. Fukunaga further discloses endoscopic guide data, which Examiner interprets as a preferred path of the instrument and insertion of the instrument in the graphics guide, col. 8, lines 1-30.

It would have been obvious to one of ordinary skill in the art at the time of the invention of Chen to include in the real image the instrument included in the environment for the medical procedure as disclosed in Fukunaga to enable an operator

Art Unit: 2675

to quickly and easily obtain guiding images for real instruments in preoperative simulation and simulate control of the actual instrument.

Regarding claim 2, Chen discloses rendering includes a modulation of the graphics guide's transparency along the length of the graphics guide, so that a plurality of portions of the graphics guide with respect to other portions of the graphics guide along the length of the graphics guide to provide a substantially unobstructed view through the plurality of transparent portion of the graphics guide; and inserting the instrument in the graphics guide (col. 10, lines 15-33, fading away, which Examiner interprets as modulating, the virtual image, i.e. graphic guide or planning marker)

Regarding claim 3, Chen discloses a transparent guide marker (col. 10, lines 15-33)

However, it is noted that Chen fails to disclose varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument.

Fukunaga discloses varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument (col. 7, lines 59-64)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the transparency of the graphics marker disclosed in Chen the

Art Unit: 2675

varying of the portions to allow a user to view hidden portions as disclosed in Fukunaga, col. 11, lines 13-19.

Regarding claim 4, Chen discloses a transparent guide marker (col. 10, lines 15-33)

However, it is noted that Chen fails to disclose varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument.

Fukunaga discloses varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument (col. 7, lines 59-64)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the transparency of the graphics marker disclosed in Chen the varying of the portions to allow a user to view hidden portions as disclosed in Fukunaga, col. 11, lines 13-19.

Regarding claim 5, Fukunaga discloses wherein plurality of portions is consecutive. (col. 8, lines 5-10)

Regarding claim 6, Chen discloses a transparent guide marker (col. 10, lines 15-33)

However, it is noted that Chen fails to disclose varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time

interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument.

Fukunaga discloses varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument (col. 7, lines 59-64)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the transparency of the graphics marker disclosed in Chen the varying of the portions to allow a user to view hidden portions as disclosed in Fukunaga, col. 11, lines 13-19.

Regarding claim 7, Chen discloses constructing the graphics guide as a line, and rendering step comprises the step of modulating the transparency of the line with respect to time so that the line repeatedly fades in and out of view to provide a substantially unobstructed view . . . (col. 10, lines 15-33)

Regarding claim 8, Chen discloses constructing the graphics guide as a line, and rendering step comprises the step of modulating the transparency of portions of the line so that at least a portion of the instrument is substantially unobstructed . . . (col. 8, lines 26-30 and col. 10, lines 26-33)

Regarding claim 9, Chen discloses rendering step comprises the step of modulating the transparency of portions of the line with respect to time and space so that at least a portion of the instrument is substantially unobstructed . . . during predefined time intervals (col. 10, lines 15-33)

Regarding claim 10, Chen discloses constructing the graphics guide as a cylinder . . . rendering step comprises the step of modulating the transparency of the cylinder with respect to time so that the cylinder repeatedly fades in and out of view . . . (virtual planning marker consist of any geometric form and a path, col. 8, lines 26-30, which Examiner interprets as inclusive of a cylinder)

Regarding claim 11, Chen discloses use of any geometric form for virtual planning markers, col. 8, lines 26-19 and further transparency of the virtual planning markers, col. 10, lines 15-22)

However, it is noted that Chen fails to disclose varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument.

Fukunaga discloses varying the transparency of each of a plurality of portions of the graphics guide during at least one predefined time interval to provide a substantially unobstructed view through each of the plurality of portion to at least a portion of the instrument (col. 7, lines 59-64) and further discloses modulating the transparency of portions of the cylinder so that at least a portion of the instrument is substantially unobstructed . . . (semitransparent image so that portions of the image can be viewed unobstructed, col. 11, lines 44)

It would have been obvious to one of ordinary skill in the art at the time of the invention to include in the transparency of the graphics marker disclosed in Chen the

Art Unit: 2675

varying of the portions to allow a user to view hidden portions as disclosed in Fukunaga, col. 11, lines 13-19.

Regarding claim 12, Chen discloses rendering step comprises the step of modulating the transparency of portions of the cylinder with respect to time and space so that at least a portion of the instrument is substantially unobstructed . . . during pre-defined time intervals (col. 10, lines 20-29)

Regarding claims 13-16 and 18-24, they are rejected based upon similar rational as above claims 1-11 respectively. Chen further discloses a video camera providing a real view of an environment, figure 1, element 45 and 45'.

Regarding claim 25, it is rejected based upon similar rational as above claim 2.

Regarding claim 28, Chen discloses the transparency of the graphics guide is modulated with respect to time (col. 10, lines 26-29, fading away some or all of the virtual image, which Examiner interprets as modulating with respect to time)

Response to Arguments

6. Applicant's arguments, see page 11, filed 12/20/2004, with respect to the rejection(s) of claim(s) 1, 13 and 25 under U.S.C. 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Chen, U.S. Patent Number 5,765,561.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Motilewa A. Good-Johnson whose telephone number is (703) 305-3939. The examiner can normally be reached on Monday, Tuesday and Thursday 9:00 AM - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Motilewa A. Good-Johnson
Examiner
Art Unit 2675

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SUMATI LEFKOWITZ
PRIMARY EXAMINEE